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ABSTRACT

This report examines U.S. agriculture's financial characteristics by assessing farm financial health directly from income and balance sheet measures. Measures of net operating margin, net cash income to the farm family unit, and equity are employed as indicators of a farm operator's financial strength. Effects of interest expenses on cash income are also examined. A discussion of research objectives precedes a review of related studies of the financial condition of U.S. farmers. The next two sections define the net operating margin criterion and its use in evaluating the financial condition of farm businesses or enterprises and define income to the family unit, or cash available for family living and principal repayment or investment, and its use in assessing the farm family unit's financial condition. The following two sections examine the effects of interest expenses on cash income and assess a farm's ability to withstand negative income shocks based on its net worth or equity. The conclusions section cites heterogeneity among U.S. agricultural producers as a major problem confounding farm policy and policy analysis and shows that about 345,000 producers had negative family cash income (FCI), 310,000 had FCI greater than $40,000, and 68,000 had FCI over $100,000. (YLB)

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The Financial Condition of Agriculture

An Income Analysis

Robert D. Reinsel
Anthony Joseph

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ABSTRACT

Research using debt/asset ratios as a measure of financial difficulties is reviewed. Additional criteria using operating margins and off-farm income are applied to 1984 data. The results show that about 345,000 farms had a negative combined operating margin and off-farm income in 1984.

Keywords: Farm income, assets, cash flow, debt, equity, income.

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SUMMARY

Variable income and declining asset values in the early 1980's created serious financial problems for farmers and their lenders. Several studies were conducted using debt/asset ratios to explain farm financial problems. However, these studies provided evidence that the debt/asset ratio was an incomplete measure and suggested that other variables should also be considered.

This analysis uses two income measures, (1) net operating margin and (2) net operating margin plus nonfarm income (family cash income) along with debt/asset ratios and equity to evaluate the financial condition of farmers. Data used in this analysis are from the Farm Cost and Returns Survey conducted by the National Agricultural Statistics Service (NASS) for the Economic Research Service.

The results suggest a large amount of heterogeneity among U.S. agricultural producers, and emphasize the difficulty in drawing correct inferences about individuals in the population from sector aggregates or averages calculated from the population. Based on family cash income classifications (operating margins plus off-farm income), the analysis shows that in 1984, about 346,000 producers had negative family cash income. However, an estimated 310,000 producers had family cash income greater than $40,000, and roughly 68,000 farms had family cash income over $100,000.

When operator net worth is considered, 55,000 producers reported equity of $5 million or more, yet 15,000 of these had negative family cash income. In addition, about 20,000 producers had both negative income and negative equity.

The Financial Condition of Agriculture

An Income Analysis

Robert D. Reinsel
Anthony Joseph

INTRODUCTION

U.S. agriculture experienced significant variability in net farm income during the early 1980's. This variability along with adverse market conditions (rising exchange rates and high real interest rates) caused expectations of the future income of U.S. agriculture to be reduced. The combination of events resulted in a significant decline in the market value of agricultural assets.

Variable income and declining asset values created serious financial problems for farmers and agricultural lenders. Because many lenders are not realizing their anticipated income, that is, they are not receiving interest from their borrowers, they are recovering a portion of the value of their assets by foreclosing on farm borrowers and reselling the assets. However, farm foreclosure is not the only issue. The decline in income and in the value of assets has also resulted in increased bank failure. Tweeten notes that of the 37 banks liquidated in the second half of 1984, 18 had at least 25 percent of their loan volume in agricultural loans.

Although farmers' aggregate cash income and net farm income were at record highs in 1984, some farming operations and other agribusinesses encountered difficulties and went out of business. These events have been widely publicized. Many analysts have called the adjustment a "financial crisis" and termed the problems encountered by agricultural lenders and borrowers as "financial stress" (Melichar; Harrington and Stam; and Johnson, Baum, and Prescott).

Although the response of export markets to lower agricultural product prices has been sluggish and participation in the 1986 conservation reserve program has been lower than expected, U.S. agriculture appears to offer, at least in the intermediate term, increased cash income to farmers (Agricultural Outlook, June 1986). However, some agricultural producers will continue to experience financial difficulties even with the increased cash income and may go out of business. Thus, the number of farms facing financial failure, and the impact these failures will have on agricultural output and the U.S. economy is at issue. Agricultural analysts and policymakers have increasingly searched for an improved understanding of the U.S. farming sector's financial condition to provide assistance to farmers more effectively.

Several studies have addressed these issues. Melichar (1984) and Harrington and Stam examined the financial health of agricultural producers based on

debt/asset ratios. Johnson, Baum, and Prescott later used similar debt/asset ratio criteria and a negative cash flow measure to portray the financial characteristics of U.S. farms. More recently, Melichar (1985) suggested that direct measurement of farmers' financial problems would be possible using income data collected by the Economic Research Service (ERS) (Melichar, 1985, p. 116).

RESEARCH OBJECTIVES

The purpose of this paper is to extend the literature that examines U.S. agriculture's financial characteristics by assessing farm financial health directly from income and balance sheet measures. In doing so, measures of net operating margin, net cash income to the farm family unit, and equity are employed as indicators of a farm operator's financial strength. In addition, the effects of interest expenses on cash income are examined.

Because farm operators are usually involved in both farm and nonfarm income activities, a distinction is made between the farm business or enterprise and the farm family unit.1/ This makes it possible to examine separately the financial performance of an operation's farming activities, and the financial position of the family unit associated with the farm. The factor distinguishing between the "farm business" and "family unit" is off-farm income.

The remainder of this report is organized into six sections. The next section is a review of related studies that examine the financial condition of U.S. farmers. Following the literature review is a section that defines the net operating margin criterion and its use in evaluating the financial condition of farm businesses or enterprises. The next section defines income to the family unit, or cash available for family living and principal repayment or investment, and its use in assessing the farm family unit's financial condition. The following two sections examine the effects of interest expenses on cash income, and assess a farm's ability to withstand negative income shocks based on its net worth or equity. The final section presents the conclusions.

RELATED STUDIES

In 1984, Melichar used debt/asset ratio criteria to assess the financial condition of U.S. agricultural producers. In his research, Melichar used data from the 1979 Farm Finance Survey, conducted by the Bureau of the Census, to classify farms into four size categories (large, medium, small, and very small) according to their annual value of farm sales. These farms

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1/ The farm business or enterprise includes all operations directly related to farming. The farm family unit includes both farm enterprise and nonfarm income-generating activities. The term "family" does not preclude nonfarm income from other economic units, e.g., individual, partnership, or corporations, and corresponds with ERS's definition of cash available for family living expenses and principal repayment.

were further classified, by debt/asset ratio, into one of the four ranges: less than or equal to 10 percent, 11 to 40 percent, 41 to 70 percent, and 71 percent and more. Underlying Melichar's research was the assumption that financial problems depend largely on relative indebtedness and that the ratio of debts to assets provided an indication of a farm operation's financial difficulty. Furthermore, Melichar inferred that farms with debt/asset ratios over 40 percent might be experiencing financial stress in the statement: "If, from the discussion above, it can be concluded that farms with a debt-asset ratio greater than 40 percent are experiencing financial stress, then about one-fifth of all farmers are in this predicament" (Melichar, 1984, p. 9). Tweeten later extended Melichar's debt/asset criterion to a cash flow analysis using aggregate data grouped into farm value of sales classifications. In that study, Tweeten calculated what he termed "tolerable debt ratios" for each sales class based on the application of average interest rates to average debt and average cash flow.

Several other studies used debt/asset ratio criteria to identify farms experiencing financial difficulties. Johnson, Jolly, Meyers, and Womack used the results of a 1984 Farm Journal survey to group farms by debt/asset ratio in order to identify farms experiencing financial stress. In their report, they suggested that debt/asset ratios measured relative indebtedness and provided a simple indicator of financial stress. The authors also stated that farms with ratios less than 40 percent were not experiencing severe financial stress, but did not extend this argument to imply farms with debt/asset ratios greater than 40 percent were having financial difficulties (Johnson and others, p. 12).

Alternatively, Harrington and Stam in a 1984 U.S. Department of Agriculture (USDA) report stated: "The best single measure of the seriousness of farmers' current financial difficulties is given by their debt/asset ratios," but that "financial distress is not perfectly reflected by debt/asset ratios" (Harrington and Stam, p. 7). Using 1983 Farm Cost and Returns Survey (FCRS) data and Melichar's debt/asset methodology, Harrington and Stam examined the financial condition of farmers and the extent of "farm financial stress." Furthermore, they redefined Melichar's debt/asset classification ranges as: less than 40 percent, 40 to 70 percent, and greater than 70 percent. The 40- to 70-percent debt/asset range was interpreted as serious stress, while greater than 70 percent represented extreme stress. The term "technically insolvent" was used to describe farms with debt/asset ratios greater than 100 percent (Harrington and Stam, p. viii).

Johnson, Baum, and Prescott later adopted the methodology developed by Harrington and Stam and used 1984 FCRS data to study the financial characteristics of U.S. farms. The authors used previous debt/asset ratio classifications as primary "stress" criteria but noted that large debt/asset ratios did not always imply financial distress, since certain farm types (i.e., poultry and egg farms) operated with relatively higher debt/asset ratios. Thus, select cash flow measures, not available in the 1983 FCRS data, were also incorporated in their analysis. Johnson, Baum, and Prescott identified an operation as having a cash-flow surplus or shortfall, depending upon whether the value of cash income after subtracting a fixed family living expense and an estimate of principal repayments, was positive or negative. By their criteria, 129,000 commercial farms were experiencing financial stress because they had both a cash shortfall and a debt/asset ratio of more than 40 percent. In addition, 68,000 farms with a debt/asset ratio greater than 40

percent and a cash surplus were said to show "potential financial stress" (Johnson, Baum, and Prescott, p. 1).

Melichar (1985), in a cooperative effort with ERS and Johnson, Baum, and Prescott, presented another look at the financial condition of U.S. agriculture. Using the 1984 FCRS data, Melichar classified farm operations with sales of $40,000 or more (according to him, commercial farms) into one of four financial positions: good, fair, stressed, and vulnerable. In assessing the financial position of the farm operation, Melichar considered four indicators: the debt/asset ratio, return on assets, return on equity, and amount of equity. Using the debt/asset ratio as the primary measure of stress, Melichar stated that the higher the operator's debt/asset ratio the less likely the operator was considered to be in good financial shape (Melichar, 1985, p. 8). However, he noted that many highly leveraged farm operators were not in financial trouble because they were operating profitably (Melichar, 1985, p. 2).

More recently, Melichar (1985), in a commentary on farm financial stress, stated that farming operations must possess similar relative profitability, interest rates, and debt repayment schedules for debt/asset ratios to provide a useful indication of financial stress. And, if these conditions do not exist, the incidence of financial stress can be inferred only from debt/asset ratios (Melichar, 1985, p. 116). Melichar also suggested that if income data are available, financial difficulty can be measured directly, and that other variables (including debt/asset ratios) can be used to explain the degree of financial strength or distress.

Similarly, Johnson, Baum, and Prescott suggested that a more complete analysis include income measures. They also implicitly showed that strict interpretation of the debt/asset ratio category definitions could lead to inaccurate conclusions for certain type of farming operations (i.e., poultry and egg farms).

The finance literature suggests that a firm is "bankrupt" whenever it cannot generate sufficient cash to pay financial obligations as they become due, even though the firm may be profitable and have a favorable equity or net worth (Barry, p. 62). Given the recent availability of income data, it would appear that initially a farm's financial success or distress may be determined by some measure of net cash income. However, because current assets can be liquidated to help finance current liabilities as they become due, without disrupting normal business operations, measures of net worth or the relative debt/asset position can be used to help assess the farm's ability to withstand any negative income shocks. In the following sections, income and balance sheet measures are developed to identify further how many farm businesses and farm family units may be experiencing financial trouble.

This analysis is based on 1984 calendar year FCRS data. The survey is a multiframe stratified probability-based survey with farmers chosen from both a list and area frame. Responses for approximately 13,000 farm operations are included in the sample which can be expanded to represent 1.7 million farms. A more complete description of the FCRS data is provided in the Johnson, Baum, and Prescott analysis.

NET OPERATING MARGIN

In this analysis, net operating margin or net cash income to the operation before family living expenses and principal repayments (receipts from farming minus the associated expenses) is used as an indicator in assessing the income generating performance of a farm operation's business. Net operating margin includes returns from production and other farm-related sources (income from Government payments, farm rental property, custom work, etc.), the direct costs associated with this production, and all interest expenses. It does not include off-farm income, family living expenses, or principal repayment. Furthermore, no allowances have been made for depreciation or returns to operator labor and capital.2/ (See definitions on p. 20.)

To examine the relationship between a farm debt/asset ratio and income-generating performance, as measured by net operating margin, debt/asset ratio and net operating margin categories were constructed and the distribution of farms within these categories computed.3/ The data show little correlation across debt/asset ratio and operating margin classes (table 1). In addition, a large proportion of farm businesses reporting negative operating margins had low debt/asset ratios. That is, of the approximately 871,000 farm businesses reporting net operating losses in 1984, 694,000 or 80 percent had debt/asset ratios less than 40 percent. The data also show that not all farm enterprises with debt/asset ratios equal to or greater than 100 percent were in serious financial difficulty. In fact, 43 percent of these operations had positive margins. However, they are likely to have very large principal obligations.

The total number of farms with operating losses exceeded the number with positive margins, and about 285,000 farms reported operating losses of at least $10,000. Furthermore, approximately 50 percent of the 933,000 farms with debt/asset ratios of less than 0.09 reported operating losses, and about 10 percent (89,000 farms) lost more than $10,000.

At the other extreme, approximately 463,000 farm businesses earned margins greater than $10,000, and 178,000 reported operating margins greater than $40,000. Approximately 104,000 of these farms with margins greater than $10,000 had debt/asset ratios over 70 percent.

The data show that debt/asset ratios are not closely correlated with operating margins and that the two variables measure different aspects of the financial condition of producers. In addition, the data confirm heterogeneity within the U.S. farming sector. So, while a large number of producers were evidently in serious financial trouble, a large number were also making significant income from farming.

2/ It is assumed that net operating margin serves as a reasonable proxy of the net return to the variable factors of production.

3/ Operating margin categories were chosen because they coincided with other definitions, maintained reasonable sample counts, and seemed to fit the distributions. However, the classifications are arbitrary in the sense that there is no theoretical basis for them.

Table 1--Number of farms by debt/asset ratio and operating margin categories, all U.S. farms, 1984

Operating margin class ($1,000)	Debt as a percentage of assets: 100 and over	99 to 90	89 to 80	79 to 70	69 to 60	59 to 50	49 to 40	39 to 30	29 to 20	19 to 10	9 to 0	U.S. total
	1,000 farms											
100 or more	2	0	1	1	3	4	3	5	6	6	18	49
40-99	6	1	3	3	4	7	10	14	15	16	50	129
10-39	6	2	4	5	10	14	15	25	25	37	141	285
0-9	9	2	4	5	7	8	8	13	16	30	254	357
Zero or more	23	5	12	14	24	33	36	57	62	89	463	820
(1)-(10)	11	3	6	6	10	17	22	28	49	54	381	585
(11)-(40)	12	2	4	9	12	13	15	24	21	26	69	208
(41)-(100)	4	1	2	3	3	5	4	6	4	5	12	50
Less than (100)	3	1	1	1	2	2	2	4	2	2	8	27
Less than 0	30	8	12	19	26	37	43	61	76	87	470	871
Total	53	13	24	34	50	71	81	118	139	176	933	1,691

Note: Data in parentheses are negative values. Data may not add due to rounding.

Because of heterogeneity, a single measure will likely prove insufficient in identifying farm businesses with problems. Furthermore, creating homogeneous farm enterprise groups is often difficult. However, this type of classification is essential in order to clarify how income problems may vary among farm operations.

To derive homogeneous farm groupings, the value of agricultural products sold by the farm enterprise was assumed to measure size and was used to construct farm size categories. The data in table 2 show the distribution of farm enterprises by net operating margin and value of sales categories. Although there appears to be a negative relationship between farm size and degree of financial difficulty, as measured by sales and net operating margin, there is still considerable diversity.

In 1984, 1.8 percent of all farm businesses reported agricultural sales of at least $500,000. Approximately 30 percent of this group reported net losses, while over 60 percent had operating margins greater than $40,000. The data also show that slightly over one-fourth of all farm businesses had net operating margins greater than $10,000. However, given the need to make debt repayment and provide for family living, it appears that farm enterprises reporting less than a $10,000 margin might be experiencing financial problems unless they received considerable nonfarm income.

Table 2--Percentage of farms by sales class and operating margin categories, all U.S. farms, 1984

Operating margin class ($1,000)	Sales class ($1,000) 500 and over	499 to 250	249 to 100	99 to 40	39 to 20	19 to 10	9 to 5	Less than 5	U.S. total
	Percent								
100 or more	50.6	29.9	5.1	0.3	0	0	0	0	2.8
40-99	12.2	27.4	34.8	8.3	0.5	0.1	0.1	0.1	7.6
10-39	5.8	15.2	27.2	45.6	27.4	6.7	.9	.1	16.9
0-9	1.6	3.9	8.1	15.0	31.9	41.2	38.4	14.9	21.2
Zero or more	70.2	76.4	75.2	69.2	59.8	48.2	39.4	15.1	48.5
(1)-(10)	6.3	1.9	5.4	11.4	21.4	33.2	48.5	71.5	34.6
(11)-(40)	3.1	6.7	9.3	13.1	14.2	16.9	10.6	12.7	12.3
(41)-(100)	3.0	7.0	6.8	5.2	3.5	1.4	0.9	.3	3.0
Less than (100)	17.4	8.0	3.3	1.2	1.1	.3	0.6	.4	1.6
Less than 0	29.8	23.6	24.8	30.8	40.2	51.8	60.6	84.9	51.5
Class total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total	1.8	4.0	13.5	18.1	11.7	11.5	12.1	27.1	100.0

Note: Data in parentheses are negative values.

Farm enterprises with sales of less than $10,000 and operating losses of more than $100,000 are of particular interest. Unless losses were desired for tax purposes, one could develop a strong argument that these farms were experiencing extreme cash flow difficulties.4/ However, it is difficult to determine a farm business's tolerance for negative operating margins or the severity of its financial problems without additional information.

The information in table 2 presents a picture of the concentration of farm enterprises experiencing cash flow difficulties by size of farming operation. However, there are significant differences within homogeneous size categories that may affect an operator's ability to acquire and use debt and generate income. These differences also affect a business's tolerance for low or negative operating margins. An obvious difference is the type of farming enterprise.

In the following section, farm enterprises were classified by type of farm according to Standard Industrial Code (SIC) categories. Because FCRS

4/ It is unlikely that a firm would choose actual operating losses as a tax shelter.

sample data become thin when classifying farm enterprises by net operating margin, sales class, and SIC, results may be statistically unreliable. To avoid this weakness and still examine size characteristics of the farm business, the sales classifications were reduced to two size categories. Farm enterprises with sales of $40,000 or more are classified as large, and those with sales of less than $40,000 are classified as small.

The distribution of large and small farm enterprises by net operating margin and SIC types are reported in table 3. The data show that short-term cash-flow

Table 3--Percentage of farms by operating margin, by type for small and large farms, 1984

Operating margin class ($1,000)	Cash grain	Field crop	General crop	Lives-stock	Dairy	All types
			Percent			
Small farms:						
100 or more	0	0.1	0	0	6.9	0
40-99	.3	.2	.1	.4	35.0	.3
10-39	17.5	6.4	2.3	5.0	9.9	7.7
0-9	33.0	50.5	10.4	22.9	20.4	26.8
Zero or more	50.8	57.1	12.8	28.2	72.2	34.8
(1)-(10)	35.9	33.7	63.7	55.1	18.6	49.1
(11)-(40)	11.7	8.4	18.1	15.1	6.4	13.8
(41)-(100)	1.4	.7	3.7	1.2	1.4	1.6
Less than (100)	.3	.1	1.7	.4	1.3	.7
Less than 0	49.2	42.9	87.2	71.8	27.8	65.2
Class total	100.0	100.0	100.0	100.0	100.0	100.0
Large farms:						
100 or more	10.3	10.5	7.2	5.7	4.0	8.3
40-99	27.4	20.8	10.7	16.0	20.2	21.5
10-39	34.3	34.6	19.6	28.1	44.9	34.2
0-9	9.0	12.0	5.9	12.5	11.9	10.5
Zero or more	81.0	88.0	44.4	62.1	81.0	74.5
(1)-(10)	5.9	5.0	7.0	10.0	7.2	7.2
(11)-(40)	7.8	12.0	10.5	14.5	7.2	9.5
(41)-(100)	3.7	2.7	16.8	9.1	3.2	5.5
Less than (100)	1.5	2.3	22.3	4.3	1.4	3.3
Less than 0	19.0	22.0	56.6	37.9	19.0	25.5
Class total	100.0	100.0	100.0	100.0	100.0	100.0

Note: Data in parentheses are negative values.

problems were common across all large and small farm enterprises. However, large farms showed a stronger operating margin position than small ones. That is, a lower percentage of large enterprises reported net operating losses. Among all farm types, relatively fewer dairy farms experienced financial difficulties. Yet, even with high Government price support benefits for dairy producers, approximately one-fifth of the large and more than one-fourth of the small dairy farms reported operating losses. Cash grain farms also showed relatively fewer farms with financial problems in both size categories than other farm types. However, 50 percent of small cash grain enterprises reported negative operating margins, and over 80 percent earned less than $10,000. On the other hand, over half of all large farms, with the exception of general crop producers, had net operating margins greater than $10,000. Of all types examined, relatively more general crop enterprises appeared to be facing the most severe financial difficulties. In addition, about 87 percent of small general crop producers reported operating losses in 1984, while over half of the large general crop farms reported losses exceeding $10,000.

Examining the number of farm enterprises by net operating margin, sales classes, and SIC type provides much of the information necessary in assessing the financial condition of U.S. farms. However, other income and balance sheet measures should be jointly considered in assessing the financial position (Melichar, 1985, p. 6). The 1984 FCRS provides a wealth of information (app. tables 1-4). In fact, it is the only national data base which provides the individual balance sheet data necessary for such analysis (Melichar, 1985, p. 6).

Table 4 shows financial data by sales and net operating margin groupings for large and small farm enterprises. Similar data by type of farm are presented in appendix tables 1 and 2. The data in table 4 show that approximately 35 percent of all farms had sales of $40,000 or more in 1984; the remaining 65 percent had sales of less than $40,000.

For the most part, large farms either earn more or lose more than small farms, and have more assets and debts for each operating margin classification. However, average debt/asset ratios tend to be similar for both large and small farms for each operating margin group. While average debt/asset ratios are slightly higher for farms with losses, these ratios would not, according to the previously discussed Harrington criteria, imply severe stress.

The data also suggest that farms that lost more that $40,000 and are classified as small on the basis of gross sales, may be misclassified. If an asset criterion were used along with value of sales, these would be large farms. A similar conclusion could be reached for small farms reporting operating margins greater than $40,000. This anomaly appears to be due to the fact that some farms had low sales but received high Government payments or CCC loans.

Because of its significance, off-farm income is considered in examining the financial condition of farm operations. Off-farm income is, by definition, income earned from sources other than farming and available to the farm enterprise for payment of operating and interest expenses, as well as principal on debt, family living expenses, and other investments.

Table 4--Selected financial data, by operating margin, for large and small farms, 1984

Item/ operating margin ($1,000)	Percentage of size class	Debt/ asset ratio	Interest and expenses	Net operating margin	Gross farm income	Equity	Debt	Off-farm income
	Pct.	Ratio		1,000 dollars				
Large farms:								
100 or more	8.3	0.31	35.9	240.4	615.2	961.9	315.0	10.5
40-99	21.5	.31	14.7	61.7	186.0	449.1	140.2	8.9
10-39	34.2	.27	10.4	23.9	110.6	318.2	91.5	7.2
0-9	10.5	.38	13.9	5,2	101.4	316.7	124.1	9.4
(1)-(10)	7.2	.40	14.7	(4.9)	106.2	286.7	129.1	10.5
(11)-(40)	9.6	.46	23.3	(22.1)	127.3	359.4	202.3	10.3
(41)-(100)	5.5	.43	31.8	(62.5)	149.7	515.9	268.5	32.2
Less than (100)	3.3	.58	72.9	(295.9)	345.9	1,097.3	593.0	14.3
Total	100.0	.27	18.6	26.2	178.9	437.9	163.5	10.2
Percentage of U.S. total	35.0	--	--	--	--	--	--	--
Small farms:								
100 or more	0	.17	31.5	198.4	705.7	628.0	231.9	2.9
40-99	.3	.24	3.1	55.3	78.1	468.7	30.6	10.0
10-39	7.7	.11	1.8	16.6	33.6	239.5	17.4	10.2
0-9	26.8	.09	.9	3.6	13.9	136.8	10.0	14.5
(1)-(10)	49.2	.13	1.4	(3.9)	6.4	123.3	13.9	18.4
(11)-(40)	13.8	.30	6.1	(18.2)	12.0	200.8	51.9	24.4
(41)-(100)	1.6	.49	15.3	(61.1)	20.7	340.5	132.7	105.5
Less than (100)	.7	.35	23.9	(195.1)	35.4	384.3	204.4	48.2
Total	100.0	.12	2.4	(4.3)	12.0	152.9	21.7	19.1
Percentage of U.S. total	65.0	--	--	--	--	--	--	--

-- = Not applicable.
Note: Data in parentheses are negative values.

FAMILY CASH INCOME

In general, small farms have larger off-farm income for each operating margin class than do large ones. Also, off-farm income of small farms tends to exceed operating losses, with the exception of those losing more than $100,000. Because off-farm income generally increases the farm business's total earnings or reduces its net losses, the inclusion of off-

farm income is essential in understanding the susceptibility of the farm enterprise to adverse economic conditions. For instance, small farms that reported operating losses between $10,000 and $40,000 had an average margin of minus $18,235. By itself, this measure suggests that these farms may be facing substantial hardship. When average off-farm income is considered, their financial position changes. But heterogeneity, in the way economic units are organized, may cause net operating margin and off-farm income to be uncorrelated. If so, the averages presented in table 4 will poorly represent individual members of the group.

To test whether the groups presented in table 4 can be represented by these averages, correlation coefficients of net operating margin with off-farm income were calculated for net operating margin and similar family income classifications (table 5). Family income measures cash available for family living and principal repayment and is defined as the sum of net operating margin and off-farm income for each farm operation. Although the signs on the coefficients are, as expected, negative, there appears to be little correlation between net operating margin and off-farm income. In addition, the few cases where the correlation coefficients rise above 0.7 correspond to a small number of observations. Thus, any implications drawn from adding operating margin and off-farm income averages are questionable.

To understand how the financial viability of farm businesses was affected by nonfarm income, the change in distribution of large and small farms from the net operating margin classes to the family income classes was computed and presented (table 6). The results show that 346,100 operations continue to have negative income. That is, their combined income from farm and nonfarm sources was not enough to cover operating expenses. Such operations can remain in business only if they have sufficient savings to cover losses and provide for family living, or if they have sufficient equity so that a lender will advance them funds on the prospect that next year's income will be better.

Table 5--Correlation coefficients for operating margin and nonfarm income by operating margin and family income classes, 1984

Operating margin class ($1,000)	Family cash income ($1,000)								
	Less than (100)	(41) to (100)	(11) to (40)	(1) to (10)	0 to 9	10 to 39	40 to 99	100 or more	All
100 or more								-.01	-0.01
40-99							-0.16	-.54	-.05
10-39						-0.32	-.67	-.27	-.06
0-9					-0.40	-.34	-.22	-.33	-.08
(1)-(10)				-0.51	-.68	-.37	-.14	-.18	-.15
(11)-(40)			-0.36	-.92	-.91	-.38	-.52	-.39	-.07
(41)-(100)		-0.32	-.86	-.97	-.98	-1.00	-.64	-.71	-.19
Less than (100)	-0.03	-.96	-.92				-.98	-.65	-.01

Note: Data in parentheses are negative values.

Table 6--Large and small farm operations by net operating margin and family cash income 1984

Operating margin class ($1,000)	Total	Family cash income ($1,000)							
		Less than (100)	(100) to (40)	(40) to (10)	(10) to 0	0 to 10	10 to 40	40 to 100	100 or more
	1,000 farms								
Small farms:									
100 or more	0.2	--	--	--	--	--	--	--	0.2
40-99	2.9	--	--	--	--	--	--	2.9	0
10-39	85.0	--	--	--	--	--	69.6	15.3	.1
0-9	296.8	--	--	--	--	128.3	147.4	18.9	2.1
(1)-(10)	543.5	--	--	--	132.2	119.6	254.3	35.0	2.3
(11)-(40)	152.4	--	--	52.9	21.6	19.2	48.2	8.3	2.3
(41)-(100)	18.2	--	11.8	4.2	0	.5	.1	1.0	.7
Less than (100)	7.9	5.0	1.3	.4	0	0	0	.9	.2
Total	1,106.8	5.0	13.1	57.5	153.8	267.6	519.7	82.2	7.8
Large farms:									
100 or more	48.5	--	--	--	--	--	--	--	48.5
40-99	126.3	--	--	--	--	--	--	117.1	9.2
10-39	200.9	--	--	--	.2	.3	164.2	35.0	1.1
0-9	61.7	--	--	--	--	37.8	19.6	3.8	.5
(1)-(10)	42.1	--	--	--	21.7	8.0	10.3	2.0	0
(11)-(40)	56.0	--	--	38.9	6.4	5.3	4.4	.7	.3
(41)-(100)	32.1	--	24.7	4.9	.4	.1	.4	.9	.7
Less than (100)	19.6	18.3	.9	0	.1	0	0	0	.1
Total	587.2	18.3	25.6	43.8	29.0	51.6	199.0	159.5	60.4
All farms:									
100 or more	48.7	--	--	--	--	--	--	--	48.7
40-99	129.2	--	--	--	--	--	--	120.1	9.2
10-39	285.9	--	--	--	.2	.3	233.8	50.3	1.2
0-9	358.4	--	--	--	--	166.1	167.0	22.7	2.6
(1)-(10)	585.5	--	--	--	154.0	127.6	264.6	37.0	2.3
(11)-(40)	208.4	--	--	91.8	28.0	24.5	52.6	8.9	2.6
(41)-(100)	50.3	--	36.6	9.0	.5	.6	.5	1.8	1.3
Less than (100)	27.4	23.3	2.2	.5	.1	0	.1	.9	.3
Total	1,693.9	23.3	38.7	101.3	182.8	319.2	718.7	241.7	68.2

-- = Not applicable.
Note: Data in parentheses are negative values.

Of the 320,000 farm operations with family cash income between zero and $10,000, about 153,000 lost money farming but had sufficient off-farm income to bring total income to the positive side of the ledger. Although this group had a positive income, they would be living near poverty levels considering that their income must cover debt repayment and family living

expenses. In all, about 871,000 farm businesses lost money. However, about 525,000 had sufficient nonfarm income to bring them to the positive side of the ledger.

The change in distribution of all U.S. farms from operating margin to family cash income categories can more easily be seen graphically. Figure 1 shows the shift in the distribution of farms when off-farm income is considered. Similar distributions for small and large farms are presented in figures 2 and 3.

Information about the distribution of farm types by family cash income class for large and small farms are presented in table 7.

Table 7--Percentage of farms by family cash income class, by type for small and large farms, 1984

Family cash income ($1,000)	Cash grain	Field crop	General crop	Livestock	Dairy	All farms
			Percent			
Small farms:						
100 or more	0.5	0.3	1.4	0.7	13.3	0.7
40-99	10.6	8.5	5.5	7.0	1.6	7.4
10-39	53.4	47.0	30.0	51.5	31.9	47.0
0-9	21.1	32.8	22.5	22.8	30.5	24.2
Zero or more	85.5	88.5	59.3	82.1	77.3	79.3
(1)-(10)	9.2	8.2	26.6	12.6	13.8	13.9
(11)-(40)	4.2	2.9	9.3	4.5	5.4	5.2
(41)-(100)	.9	.5	3.4	.6	2.5	1.2
Less than (100)	.3	0	1.5	.3	1.0	.5
Less than 0	14.5	11.5	40.7	17.9	22.7	20.7
Total	100.0	100.0	100.0	100.0	100.0	100.0
Large farms:						
100 or more	12.8	11.5	7.7	8.4	5.1	10.3
40-99	34.1	30.9	13.2	20.0	24.6	27.2
10-39	31.4	27.2	27.3	32.4	44.4	33.9
0-9	7.8	10.4	1.7	9.6	12.0	8.8
Zero or more	86.1	80.0	49.9	70.4	86.1	80.1
(1)-(10)	3.6	4.3	3.0	7.4	4.9	4.9
(11)-(40)	5.9	11.3	9.9	11.3	5.2	7.5
(41)-(100)	2.9	2.3	15.0	7.0	2.5	4.4
Less than (100)	1.4	2.1	22.3	3.9	1.2	3.1
Less than 0	13.9	20.0	50.1	29.6	13.9	19.9
Total	100.0	100.0	100.0	100.0	100.0	100.0

Note: Data in parentheses are negative values.

Figure 1 Distribution of all farms by net operating margin and family cash income, 1984

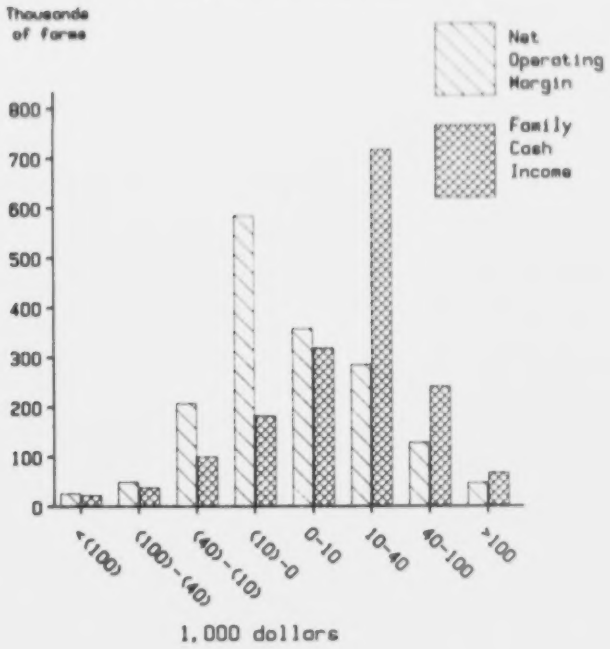


Figure 2 Distribution of small farms by net operating margin and family cash income, 1984

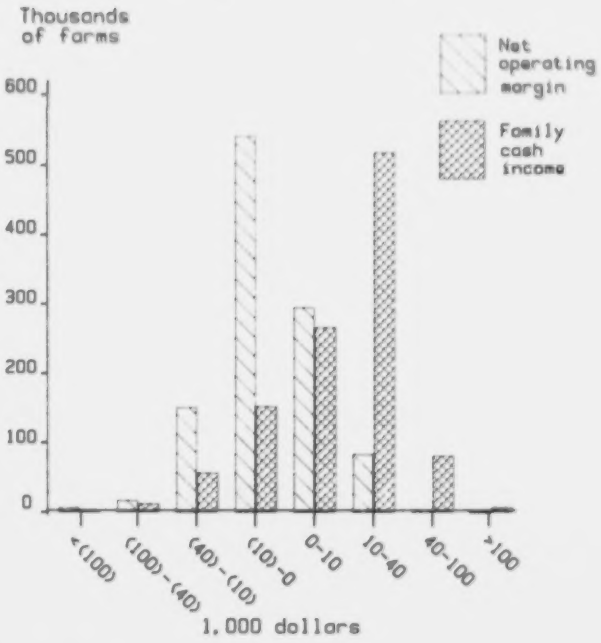
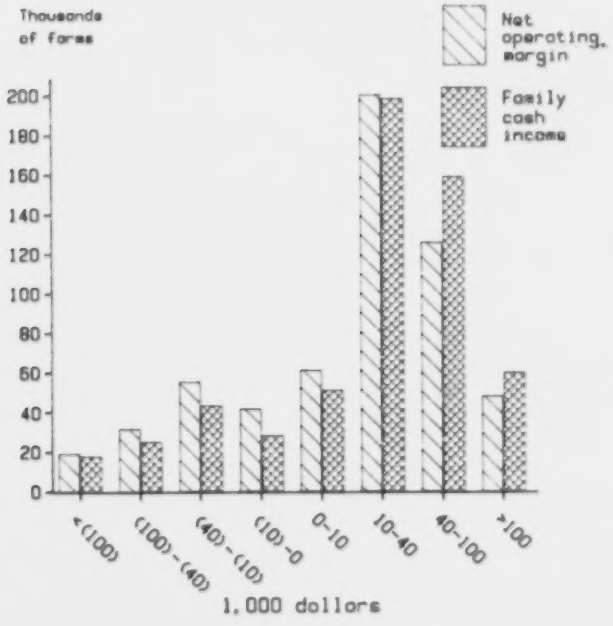


Figure 3 Distribution of large farms by net operating margin and family cash income, 1984



The data show that about 80 percent of both large and small farms had a positive total return. Over 70 percent of the large farms and nearly 55 percent of the small farms--a total of 1 million farms--earned more than $10,000. About 42 percent of all farms had a family cash income of between $10,000 and $40,000 after interest payments. The average data by farm type and family cash income classes for selected financial variables are presented in appendix tables 3 and 4.

INTEREST

The effect of interest on income and the financial position of farmers has become a significant issue as farmers with large interest payments relative to income may be more vulnerable to income shocks and declining equity. The 1984 data show that about 1.4 million of the 1.7 million producers covered by the survey had a positive family cash income before interest payments (table 8). On the other hand, approximately 265,000 producers reported negative family income before interest payments, leaving no residual for debt servicing or family living. The survey shows that after interest payments, 345,000 producers had a negative family cash income. That is, an additional 80,000 producers were placed in rather severe financial difficulty because they had no income for family living or debt repayment.

Table 8--Distribution of all farms by family income before and after interest, 1984

Family cash income before interest ($1,000)	Family cash income after interest ($1,000)								
	Total	100 or more	40 to 99	10 to 39	0 to 9	(1) to (10)	(11) to (40)	(41) to (100)	Less than (100)
	1,000 farms								
100 or more	91	68	20	1	2	0	0	0	0
40-99	310	--	221	77	6	2	3	1	0
10-39	732	--	--	641	63	15	10	2	1
0-9	296	--	--	--	250	36	8	2	0
Zero or more	1429	68	241	719	321	53	21	5	1
(1)-(10)	157	--	--	--	--	129	26	1	0
(11)-(40)	68	--	--	--	--	--	54	14	1
(41)-(100)	24	--	--	--	--	--	--	19	5
Less than (100)	16	--	--	--	--	--	--	--	16
Less than 0	265	--	--	--	--	129	80	34	22
Total	1694	68	241	719	321	182	101	39	23

-- = Not applicable.
Note: Data in parentheses are negative values.

In total, the 1984 survey results show that about 666,000 farm operations had family cash income of less than $10,000 after interest payments, and, approximately 309,000 farms had more than $40,000 of family cash income after interest payments.

EQUITY

Considering the joint effects of income and wealth is important in understanding the financial position of farmers, since the farm operation's wealth may provide a buffer against negative income. If a farm operation is faced with negative income and has insufficient equity to buffer the financial position against this income shock, the producer may be out of business the next year. Table 9 presents the distribution of farms by family cash income and equity. About 20,000 producers had both negative income and equity in 1984. An additional 28,000 operators had levels of equity that were about equal to their losses; they too are likely farm failures. An additional 278,000 operators had negative family cash income, but had equity reserves that could have been drawn on to provide funds for living assuming these reserves were not already committed toward securing debt.

Table 9--Number of farms by family cash income and equity classes, 1984

Family cash income ($1,000)	Equity ($1,000)											
	Less than (100)	(41) to (100)	(11) to (40)	(1) to (10)	0 to 9	10 to 39	40 to 99	100 to 249	250 to 499	500 to 999	1,000 or more	Total
	1,000 farms											
Less than (100)	2	0	0	0	0	1	1	4	5	5	5	23
(41-100)	1	2	1	0	0	1	4	11	9	6	3	39
(11)-(40)	1	2	3	2	2	9	12	37	17	13	4	101
(1)-(10)	0	1	3	2	6	21	48	62	30	7	3	183
Less than 0	4	5	7	4	8	32	66	113	61	31	15	346
0-9	0	2	2	3	10	54	97	103	34	9	4	319
10-39	2	4	4	4	21	80	192	263	110	31	7	719
40-99	1	2	2	2	2	10	31	80	60	41	10	242
100 or more	1	0	0	0	0	1	4	12	13	17	19	68
Zero or more	4	9	9	9	33	145	324	458	217	98	40	1,348
Total	8	14	16	13	41	177	390	571	278	129	55	1,694

Note: Data in parentheses are negative values.

The survey results also show about 31,000 producers with positive family cash income and negative equity (their liabilities exceeded their assets). Because these operators had positive income after interest payments, their lenders may be tolerant of their poor security position. Furthermore, over 1 million producers had both positive equity and family cash income greater than $10,000.

A shortcoming in using the absolute equity position of producers to measure wealth is that it tells nothing about the liabilities of the farm. Similarly, debt/asset ratios measure relative indebtedness but nothing about the absolute level of equity. About 111,000 producers had negative family cash income between -$1,000 and -$10,000, and a debt/asset ratio less than 10 percent (table 10). Of the 343,000 producers with negative family cash income, about 43,000 had debt/asset ratios greater than 70 percent. Of the 1 million producers with over $10,000 in family cash income, approximately 46,000 had debt/asset ratios greater than 70 percent. Thus, while there is correlation between relatively higher debt and negative net cash income to the family, the relationship is not strong.

Table 10--Number of farms by debt/asset ratio by family cash income class, 1984

Family cash income ($1,000)	Debt as a percentage of assets											
	100 or more	90 to 99	80 to 89	70 to 79	60 to 69	50 to 59	40 to 49	30 to 39	20 to 29	10 to 19	0 to 9	Total
	1,000 farms											
100 or more	2	0	1	1	3	5	4	7	8	8	29	68
40-99	7	1	4	3	6	9	15	22	23	33	119	241
10-39	14	5	7	11	17	29	31	49	63	78	412	718
0-9	9	3	4	6	8	7	9	12	17	24	218	318
Zero or more	33	9	16	22	35	50	59	89	112	143	778	1,345
(1)-(10)	7	1	3	3	4	7	10	9	13	16	111	183
(11)-(40)	7	1	3	5	7	7	6	13	9	13	30	101
(41)-(100)	4	1	2	3	2	4	3	4	3	4	10	39
Less than (100)	3	1	1	1	1	2	2	3	2	1	7	23
Less than 0	20	4	8	11	15	19	22	29	28	34	157	346
Total	53	13	23	33	50	69	81	118	139	177	935	1,691

Note: Data in parentheses are negative values.

CONCLUSIONS

The analysis depicts a major problem confounding farm policy and policy analysis, that is, the heterogeneous nature of U.S. agricultural firms. Farm operations produce a variety of commodities under a diverse set of organizational configurations and costs. Depending on the commodities produced, location, size of operation, management, natural phenomena, etc. returns from production vary widely. Furthermore, sources of variation may be dissimilar among farm operations. Generalizations about farms or farmers and about their financial condition are hazardous at best. The analysis shows that net operating margin (cash income) conditions for farm operators in 1984 are not closely correlated with debt/asset ratios. This suggests that multiple criteria are required to identify operations experiencing financial trouble.

It is difficult to establish a demarcation point between those who are in financial difficulty and those who are not. Certainly all producers who lost money from current operations are under some financial pressure because of their need to cover losses and meet family living expenses. In light of this, it seems that farm operations with margins less than $10,000 would be living near the poverty level if they did not have another source of income.

The family income picture generally improves when off-farm income is considered. However, after interest payments, 345,000 producers showed a negative income before family living expenses, debt repayment, or depreciation of assets are considered. About 265,000 had negative income before interest payments. In addition, about 321,000 operators had a combined operating margin and off-farm income between zero and $10,000.

At the other end of the distribution, 310,000 farm operators earned more than $40,000 from combined farm and off-farm sources in 1984.

Considering both equity and income, slightly over 1 million producers had family cash income over $10,000 and positive equity. However, about 20,000 producers had both negative income and negative equity.

REFERENCES

Barry, Peter J., John Hopkins, and C. B. Baker. Financial Management in Agriculture. Interstate Printers and Publishers, Danville, Illinois, 1983.

Harrington, David H., and Jerome M. Stam. The Current Financial Condition Of Farmers and Lenders. AIB-490. U.S. Dept. Agr., Econ. Res. Serv., Mar. 1985.

Johnson, Jim, Kenneth Baum, and Richard Prescott. Financial Characteristics of U.S. Farms, January 1985. AIB-495, U.S. Dept. Agr., Econ. Res. Serv., July 1985.

Johnson, S. R., R. W. Jolly, W. H. Meyers, and A. W. Womack. "Economy-Wide Impacts of the Farm Financial Crisis: A Summary Report," Excerpted from FAPRI Staff Report #9-85, July 1985.

Melichar, Emanuel. "A Farm Financial Perspective on Agriculture," Federal Reserve Bulletin, Federal Reserve Board, Jan. 1984.

Melichar, Emanuel. "Farm Financial Experience and Agricultural Banking Experience," Statement before The U.S. House of Representatives, Committee on Banking, Finance, and Urban Affairs; Subcommittee on Economic Stabilization, Oct. 23, 1985.

Melichar, Emanuel. "Commentary," U.S. Agricultural Policy: The 1985 Farm Legislation. Ed. Bruce Gardner, American Enterprise Institute for Public Policy, Washington, DC, 1985.

Tweeten, Luther. "Farm Financial Stress, Structure of Agriculture, and Public Policy", U.S. Agricultural Policy: The 1985 Farm Legislation. Ed. Bruce Gardner, American Enterprise Institute for Public Policy, Washington, DC, 1985.

DEFINITIONS

Net operating margin = farm cash receipts - operating expenses

Farm receipts include:
- Crop and livestock receipts
- Government payments
- Custom work and machine hire
- Insurance payments
- Wages earned on other farms
- Custom feeding and grazing
- Other farm-related income including recreational sales by product income tax refunds, etc.

Farm expenses include:
- Feed
- Dairy cattle and calves leasing
- Custom grinding, grazing, feed storage, etc.
- Livestock and poultry services and supplies
- Cash wages paid to hired workers
- Contract labor
- Fertilizer, lime, etc.
- Pesticides and leasing of application machinery
- Fuels and oils, minus rebates
- Farm building maintainance
- Custom work hired
- Business insurance
- Marketing and transportation
- Property taxes
- Interest
- Cash rent
- Purchased livestock and poultry
- Plants and seeds
- Equipment leasing

Family cash income = net operating margin + off-farm income

Off-farm income includes:
- Nonfarm business income
- Nonfarm cash wages

Appendix table 1--Operating margins: Selected cash-flow variables and number of farms with sales greater than or equal to $40,000, 1984

Item/ operating margin ($1,000)	Farms	Debt/ asset ratio	Interest and expenses	Net operating margin	Off-farm income	Family cash income	Equity	Debt
	Thou.			1,000 dollars				
Cash grain:								
100 or more	19.9	0.30	31.7	191.6	7.7	199.3	838.0	256.3
40-99	53.1	.32	14.7	64.2	10.7	74.9	432.8	135.6
10-39	66.4	.30	11.8	24.8	8.3	33.1	297.6	100.5
0-9	17.5	.35	16.3	5.5	9.0	14.5	311.2	140.5
(1)-(10)	11.5	.48	18.3	(4.9)	11.1	6.3	256.0	150.1
(11)-(40)	15.1	.50	25.8	(21.5)	9.9	(11.6)	329.5	211.1
(41)-(100)	7.2	.57	41.7	(65.2)	11.7	(53.5)	468.0	382.4
Less than (100)	3.0	.80	106.8	(246.4)	9.4	(236.9)	537.1	885.3
Total	193.6	.29	19.1	38.2	9.4	47.6	401.5	163.8
Field crops:								
100 or more	3.5	.27	30.6	211.7	24.0	235.6	1,078.0	254.8
40-99	6.9	.25	10.1	57.1	5.8	62.9	307.1	82.0
10-39	11.4	.24	6.9	26.1	7.7	33.8	262.2	58.5
0-9	4.0	.41	16.6	3.7	15.0	18.7	266.1	129.5
(1)-(10)	1.7	.35	12.3	(3.4)	5.2	1.8	241.2	106.1
(11)-(40)	4.0	.27	16.3	(18.6)	5.3	(13.3)	288.3	108.6
(41)-(100)	0.9	.53	47.2	(62.5)	11.8	(50.7)	628.2	378.3
Less than (100)	0.7	.83	80.8	(362.0)	6.6	(355.4)	922.4	685.2
Total	33.0	.24	15.4	31.4	9.6	41.0	385.0	123.9
General crop:								
100 or more	1.8	.42	73.7	217.6	12.9	230.5	1,477.6	655.2
40-99	2.7	.23	19.8	62.3	11.7	74.0	500.8	157.4
10-39	4.9	.60	12.7	19.4	5.1	24.5	211.9	109.9
0-9	1.5	.27	18.3	4.7	13.5	18.2	298.4	141.6
(1)-(10)	1.7	.15	10.4	(5.2)	13.8	8.6	560.7	71.2
(11)-(40)	2.6	.88	24.2	(28.5)	6.2	(22.3)	213.2	310.0
(41)-(100)	4.2	.35	16.0	(66.2)	10.1	(56.1)	185.3	121.1
Less than (100)	5.6	.62	48.6	(324.8)	1.9	(322.9)	1,007.1	447.9
Total	25.1	.32	27.8	(60.6)	7.7	(52.9)	536.3	251.7
Livestock:								
100 or more	8.1	.32	44.0	267.5	12.3	279.8	1,345.3	394.6
40-99	22.9	.26	17.1	58.9	9.1	68.0	639.6	165.1
10-39	40.2	.24	11.0	23.2	9.1	32.3	503.8	101.1
0-9	17.9	.39	12.1	5.3	12.1	17.4	428.7	107.8
(1)-(10)	14.3	.34	13.3	(5.2)	10.7	5.5	330.5	119.6
(11)-(40)	20.7	.41	22.4	(22.1)	12.8	(9.3)	436.6	183.4
(41)-(100)	13.0	.35	29.2	(59.7)	60.8	1.1	693.0	249.2
Less than (100)	6.2	.40	85.1	(316.1)	22.6	(293.5)	1,800.8	598.1
Total	143.3	.23	20.7	8.8	15.6	24.5	610.1	177.5

Continued--

Appendix table 1--Operating margins: Selected cash-flow variables and number of farms with sales greater than or equal to $40,000, 1984--Continued

Item/ operating margin ($1,000)	Farms	Debt/ asset ratio	Interest and expenses	Net operating margin	Off-farm income	Family cash income	Equity	Debt
	Thou.		1,000 dollars					
Dairy farms:								
100 or more	5.4	0.33	50.8	297.0	8.3	305.3	1,010.1	446.8
40-99	27.2	.29	14.4	58.6	5.4	64.0	437.7	146.1
10-39	60.4	.27	9.8	24.1	3.7	27.8	259.7	89.7
0-9	16.0	.41	13.2	5.2	4.0	9.2	225.8	130.2
(1)-(10)	9.7	.46	16.0	(4.3)	8.5	4.2	230.0	154.1
(11)-(40)	9.8	.46	24.9	(22.4)	9.7	(12.7)	320.4	236.0
(41)-(100)	4.3	.51	40.9	(61.9)	9.9	(52.1)	381.7	305.1
Less than (100)	1.9	.49	62.3	(204.9)	11.5	(193.3)	593.1	400.1
Total	134.7	.31	16.0	28.4	5.3	33.8	332.4	146.5
All farms:								
100 or more	48.5	.31	35.9	240.4	10.5	250.9	961.9	315.0
40-99	126.3	.31	14.7	61.8	8.9	70.7	449.1	140.2
10-39	200.9	.27	10.4	23.9	7.2	31.2	318.2	91.5
0-9	61.7	.38	13.9	5.2	9.4	14.6	316.7	124.1
(1)-(10)	42.1	.40	14.7	(4.9)	10.4	5.6	286.7	129.1
(11)-(40)	56.0	.46	23.3	(22.1)	10.3	(11.8)	359.4	202.3
(41)-(100)	32.1	.43	31.8	(62.5)	32.2	(30.3)	515.9	268.5
Less than (100)	19.6	.58	72.9	(295.9)	14.3	(281.6)	1,097.3	593.0
Total	587.2	.27	18.6	26.2	10.2	36.4	437.9	163.5

Note: Data in parentheses are negative values.

Appendix table 2--Operating margins: Selected cash-flow variables and number of farms sales less than $40,000, 1984

Item/ operating margin ($1,000)	Farms	Debt/ asset ratio	Interest and expenses	Net operating margin	Off-farm income	Family cash income	Equity	Debt
	Thou.		----------	1,000 dollars	----------			
Cash grain:								
100 or more	0	0.30	30.0	184.2	0	184.2	1,199.5	300.0
40-99	0.6	.32	4.6	56.9	9.6	66.6	574.0	26.7
10-39	35.8	.30	1.8	16.7	13.5	30.2	190.7	19.0
0-9	67.8	.35	1.5	4.6	17.5	22.1	136.9	14.1
(1)-(10)	73.8	.48	2.4	(3.8)	19.9	16.1	114.8	24.0
(11)-(40)	23.9	.50	8.8	(18.8)	22.8	3.9	126.4	79.9
(41)-(100)	2.8	.57	19.7	(58.1)	13.1	(45.0)	321.2	175.5
Less than (100)	.5	.80	45.2	(158.7)	7.3	(151.4)	408.3	433.9
Total	205.3	.17	3.1	(0.1)	18.2	18.0	141.8	29.6
Field crops:								
100 or more	.1	.27	0	120.9	0	120.9	162.7	0
40-99	.3	.25	2.7	53.5	9.7	63.2	84.1	30.8
10-39	7.5	.24	1.8	17.1	4.3	21.3	149.1	18.8
0-9	59.9	.41	.6	3.3	12.8	16.1	85.1	5.4
(1)-(10)	39.9	.35	2.0	(3.4)	18.3	14.9	119.5	18.2
(11)-(40)	9.9	.27	6.9	(16.9)	35.8	18.9	292.4	53.1
(41)-(100)	.8	.53	14.0	(50.0)	11.4	(38.6)	221.3	193.5
Less than (100)	.1	.83	26.3	(129.2)	76.3	(52.9)	1,150.9	185.4
Total	118.6	.12	1.8	(0.1)	16.1	16.0	120.1	16.1
General crop:								
100 or more	0	.42	89.3	323.8	2.5	326.3	967.4	599.5
40-99	.2	.23	0	50.7	7.2	57.9	428.5	0
10-39	4.1	.60	1.9	15.3	10.5	25.8	359.3	14.5
0-9	19.0	.27	1.1	3.1	15.8	19.0	146.6	15.8
(1)-(10)	116.5	.15	.8	(4.1)	13.5	9.5	119.5	7.4
(11)-(40)	33.2	.88	4.6	(19.0)	23.8	4.8	194.6	40.1
(41)-(100)	6.8	.35	16.9	(65.6)	17.6	(48.1)	252.1	127.3
Less than (100)	3.1	.62	33.2	(270.5)	20.3	(250.3)	462.3	278.0
Total	182.9	.13	2.7	(12.2)	15.8	3.6	152.5	23.5
Livestock:								
100 or more	0	.32	7.2	232.8	15.9	248.7	404.3	34.4
40-99	1.7	.26	2.8	56.1	11.1	67.3	507.3	34.2
10-39	24.0	.24	1.5	17.2	8.5	25.7	364.0	14.7
0-9	110.2	.39	.6	3.1	14.6	17.7	168.0	6.8
(1)-(10)	265.5	.34	1.3	(3.7)	20.2	16.5	126.9	12.6
(11)-(40)	72.8	.41	5.4	(18.1)	25.1	6.9	215.9	46.9
(41)-(100)	6.0	.35	14.0	(59.9)	282.2	222.4	494.2	114.5
Less than (100)	1.9	.40	15.1	(137.3)	38.3	(99.0)	240.2	139.7
Total	482.1	.10	2.0	(4.3)	22.4	18.1	167.9	18.4

Continued--

Appendix table 2--Operating margins: Selected cash-flow variables and number of farms sales less than $40,000, 1984--Continued

Item/ operating margin ($1,000)	Farms	Debt/ asset ratio	Interest and expenses	Net operating margin	Off-farm income	Family cash income	Equity	Debt
	Thou.		----------	1,000 dollars	----------			
Dairy farms:								
100 or more	5.4	0.33	50.8	297.0	8.3	305.3	1,010.1	446.8
40-99	.9	.29	1.2	(2.4)	52.6	50.2	198.2	16.6
10-39	7.7	.27	1.7	14.6	4.4	19.0	172.6	15.9
0-9	15.9	.41	1.9	5.0	5.0	10.0	109.3	20.0
(1)-(10)	14.5	.46	2.9	(4.4)	11.6	7.2	111.8	25.2
(11)-(40)	4.9	.46	9.4	(15.6)	9.4	(6.2)	132.8	44.2
(41)-(100)	1.1	.51	4.0	(54.3)	11.0	(43.3)	104.7	138.9
Less Than (100)	1.0	.49	26.1	(198.4)	20.4	(178.0)	298.8	197.9
Total	51.3	.25	8.5	27.0	8.8	35.7	221.4	74.1
All farms:								
100 or more	.2	.31	31.5	198.4	1.9	200.3	628.0	231.9
40-99	2.9	.31	3.1	55.3	10.0	65.3	468.7	30.6
10-39	85.0	.27	1.8	16.6	10.2	26.8	239.5	17.4
0-9	296.8	.38	.9	3.6	14.5	18.1	136.8	10.0
(1)-(10)	543.5	.40	1.4	(3.8)	18.4	14.6	123.3	13.9
(11)-(40)	152.4	.46	6.1	(18.2)	24.4	6.1	200.8	51.9
(41)-(100)	18.2	.43	15.3	(61.1)	105.5	44.5	340.5	132.7
Less than (100)	7.9	.58	23.9	(195.1)	48.2	(146.9)	384.3	204.4
Total	1,106.8	.12	2.4	(4.3)	19.1	14.8	152.9	21.7

Note: Data in parentheses are negative values.

Appendix table 3--Family income: Selected cash-flow variables and number of farm sales greater than or equal to $40,000, 1984

Item/ total family income ($1,000)	Farms	Debt/ asset ratio	Interest and expenses	Net operating margin	Off-farm income	Family cash income	Equity	Debt
	Thou.			1,000 dollars				
Cash grain:								
100 or more	24.9	0.29	31.2	168.8	20.4	189.2	835.6	255.5
40-99	66.0	.31	13.1	52.7	11.6	64.4	376.8	121.0
10-39	60.8	.32	12.8	19.2	5.9	25.2	293.6	108.0
0-9	15.2	.41	17.2	(.8)	6.6	5.8	329.5	137.0
(1)-(10)	7.0	.49	20.0	(7.5)	3.0	(4.5)	240.7	175.1
(11)-(40)	11.5	.53	29.2	(25.2)	3.3	(21.9)	291.5	252.7
(41)-(100)	5.7	.58	47.2	(71.8)	2.4	(69.4)	485.9	395.9
Less than (100)	2.7	.81	105.8	(259.3)	4.9	(254.4)	552.2	886.8
Total	193.6	.29	19.1	38.2	9.4	47.6	401.5	163.8
Field crops:								
100 or more	3.8	.19	30.3	198.2	36.5	234.6	1,074.1	255.5
40-99	10.2	.18	10.6	45.3	11.8	57.1	340.6	74.9
10-39	9.0	.29	7.1	22.2	4.8	27.0	194.4	80.8
0-9	3.4	.27	15.8	5.7	(0.7)	5.0	275.1	102.6
(1)-(10)	1.4	.35	13.5	(6.0)	2.8	(3.3)	197.1	108.0
(11)-(40)	3.7	.26	16.5	(19.5)	1.9	(17.5)	296.8	105.9
(41)-(100)	0.8	.42	43.5	(65.9)	2.5	(63.4)	512.6	365.2
Less than (100)	0.7	.39	77.0	(378.0)	5.5	(372.5)	985.5	642.2
Total	33.0	.24	15.4	31.4	9.6	41.0	385.0	123.9
General crop:								
100 or more	1.9	.40	69.4	206.7	18.0	224.6	1,439.5	616.4
40-99	3.3	.22	18.1	52.8	14.7	67.4	453.1	146.8
10-39	6.8	.55	17.7	7.0	13.4	20.4	206.9	140.9
0-9	.4	.51	21.9	(1.2)	5.6	4.4	332.2	218.9
(1)-(10)	.7	.26	10.2	(5.8)	1.5	(4.2)	962.1	139.2
(11)-(40)	2.5	.86	19.7	(30.0)	1.9	(28.1)	184.9	241.0
(41)-(100)	3.8	.28	12.0	(65.2)	.4	(64.8)	215.7	100.3
Less than (100)	5.6	.62	48.6	(325.2)	1.5	(323.6)	1,008.0	448.3
Total	25.1	.32	27.8	(60.6)	7.7	(52.9)	536.3	251.7
Livestock:								
100 or more	12.0	.26	34.5	190.2	97.5	287.8	1,402.9	308.6
40-99	28.7	.26	15.0	46.4	12.5	58.8	578.8	149.2
10-39	46.5	.31	11.8	15.7	8.7	24.4	423.4	105.4
0-9	13.8	.31	12.2	1.2	4.4	5.6	441.2	112.3
(1)-(10)	10.6	.37	19.0	(11.4)	6.3	(5.1)	409.2	165.4
(11)-(40)	16.1	.40	25.4	(28.4)	5.0	(23.3)	442.7	195.8
(41)-(100)	10.0	.38	30.5	(65.8)	6.6	(59.2)	675.1	260.3
Less than (100)	5.5	.40	88.1	(333.5)	5.6	(327.9)	1,800.9	627.0
Total	143.3	.23	20.7	8.8	15.6	24.5	610.1	177.5

Continued--

Appendix table 3--Family income: Selected cash-flow variables and number of farm sales greater than or equal to $40,000, 1984--Continued

Item/ total family income ($1,000)	Farms	Debt/ asset ratio	Interest and expenses	Net operating margin	Off-farm income	Family cash income	Equity	Debt
	Thou.				1,000 dollars			
Dairy farms:								
100 or more	6.9	0.30	42.9	246.9	19.9	266.8	952.8	389.3
40-99	33.1	.29	14.3	50.9	7.6	58.5	404.8	139.4
10-39	59.8	.28	9.6	21.2	3.1	24.4	251.0	91.3
0-9	16.2	.46	16.1	(.2)	4.6	4.4	212.2	162.6
(1)-(10)	6.6	.41	18.4	(8.1)	4.1	(4.0)	275.6	140.1
(11)-(40)	7.1	.44	25.9	(28.0)	3.8	(24.1)	341.5	222.4
(41)-(100)	3.4	.62	47.3	(65.0)	3.0	(62.0)	331.9	343.9
Less than (100)	1.7	.43	52.4	(214.3)	2.8	(211.5)	591.0	407.4
Total	134.7	.31	16.0	28.4	5.3	33.8	332.4	146.5
All farms:								
100 or more	60.4	.29	33.0	204.4	37.0	241.4	975.7	291.1
40-99	159.5	.30	13.5	50.5	11.5	61.9	406.9	126.7
10-39	199.0	.30	11.0	18.6	6.1	24.7	297.8	98.2
0-9	51.6	.40	15.2	.5	4.7	5.2	321.9	135.7
(1)-(10)	29.0	.40	17.9	(9.3)	4.7	(4.6)	329.4	150.9
(11)-(40)	43.8	.47	25.3	(26.5)	3.8	(22.7)	348.8	213.3
(41)-(100)	25.6	.45	33.3	(67.1)	3.9	(63.1)	492.2	274.0
Less than (100)	18.3	.57	71.9	(306.0)	3.8	(302.2)	1,092.1	598.5
Total	587.2	.27	18.6	26.2	10.2	36.4	437.9	163.5

Note: Data in parentheses are negative values.

Appendix table 4--Family income: Selected cash-flow variables and number of farm sales less than $40,000, 1984

Item/ family cash income ($1,000)	Farms	Debt/ asset ratio	Interest and expenses	Net operating margin	Off-farm income	Family cash income	Equity	Debt
	Thou.			1,000 dollars				
Cash grain:								
100 or more	1.0	0.30	3.7	(1.9)	390.1	388.2	178.1	32.7
40-99	21.7	.32	2.6	8.3	43.6	51.9	202.9	26.3
10-39	109.5	.30	2.4	3.3	18.4	21.6	132.1	23.8
0-9	43.3	.35	2.5	(.2)	5.7	5.5	131.4	21.0
(1)-(10)	18.8	.48	3.7	(7.2)	3.5	(3.7)	125.5	34.8
(11)-(40)	8.6	.50	8.7	(25.1)	4.0	(21.1)	151.7	84.0
(41)-(100)	1.8	.57	22.0	(64.6)	9.0	(55.6)	271.4	190.2
Less than (100)	.5	.80	45.2	(158.7)	7.3	(151.4)	408.3	433.9
Total	205.3	.17	3.1	(0.1)	18.2	18.0	141.8	29.6
Field crops:								
100 or more	.3	.27	0	21.1	126.7	147.8	230.6	0
40-99	10.0	.25	3.6	1.0	58.2	59.2	189.3	27.6
10-39	55.7	.24	1.7	1.6	19.5	21.1	112.3	14.6
0-9	38.8	.41	0.5	1.2	4.3	5.4	76.8	5.0
(1)-(10)	9.7	.35	2.9	(5.5)	1.7	(3.8)	152.0	29.7
(11)-(40)	3.4	.27	7.6	(22.3)	3.4	(18.9)	425.5	56.2
(41)-(100)	.5	.53	18.4	(59.6)	6.5	(53.1)	194.2	252.6
Less than (100)	0	.83	28.3	(304.8)	9.4	(295.4)	325.4	641.8
Total	118.6	.12	1.8	(0.1)	16.1	16.0	120.1	16.1
General crop:								
100 or more	2.5	.42	8.4	(10.5)	180.6	170.0	226.1	178.2
40-99	10.0	.23	2.0	(4.7)	57.4	52.7	173.8	16.3
10-39	54.8	.60	1.8	(3.6)	25.5	21.9	118.5	17.5
0-9	41.1	.27	0.7	(3.1)	8.0	4.8	123.3	6.8
(1)-(10)	48.7	.15	0.9	(4.6)	1.3	(3.3)	155.3	9.3
(11)-(40)	16.9	.88	4.8	(23.0)	1.5	(21.5)	199.4	37.8
(41)-(100)	6.2	.35	18.3	(69.0)	7.5	(61.5)	268.3	138.9
Less than (100)	2.7	.62	33.3	(288.5)	2.7	(285.8)	526.1	181.4
Total	182.9	.13	2.7	(12.2)	15.8	3.6	152.5	23.5
Livestock:								
100 or more	3.5	.32	1.6	(23.1)	574.9	551.8	689.1	14.4
40-99	33.9	.26	2.0	1.5	52.1	53.6	243.6	20.1
10-39	248.4	.24	1.6	(1.8)	23.4	21.6	149.8	15.2
0-9	109.8	.39	1.1	(2.2)	7.4	5.2	135.0	11.4
(1)-(10)	60.6	.34	2.4	(6.8)	3.4	(3.5)	165.3	21.2
(11)-(40)	21.7	.41	6.6	(26.9)	7.3	(19.6)	304.9	60.0
(41)-(100)	2.8	.35	16.8	(64.5)	6.3	(58.2)	444.9	106.5
Less than (100)	1.2	.40	19.6	(143.4)	13.2	(130.2)	285.3	167.1
Total	482.1	.10	2.0	(4.3)	22.4	18.1	167.9	18.4

Continued--

Appendix table 4--Family income: Selected cash-flow variables and number of farm sales less than $40,000, 1984--Continued

Item/ family cash income ($1,000)	Farms	Debt/ asset ratio	Interest and expenses	Net operating margin	Off-farm income	Family cash income	Equity	Debt
	Thou.			1,000 dollars				
Dairy farms:								
100 or more	5.4	0.33	50.8	297.0	8.3	305.3	1,010.1	446.8
40-99	.9	.29	1.2	(2.4)	52.6	50.2	198.2	16.6
10-39	16.6	.27	2.1	6.9	12.3	19.1	155.5	18.7
0-9	15.8	.41	1.9	1.1	4.3	5.3	95.8	25.2
(1)-(10)	7.2	.46	4.3	(6.9)	2.7	(4.2	111.4	40.6
(11)-(40)	2.8	.46	12.8	(16.7)	1.9	(14.8	106.4	28.5
(41)-(100)	1.3	.51	16.2	(76.9)	8.4	(68.5)	72.5	169.1
Less than (100)	.5	.49	16.7	(286.0)	19.7	(266.3)	565.0	131.3
Total	50.5	.25	8.7	27.5	8.0	35.5	221.8	75.0
All farms:								
100 or more	7.8	.31	4.0	(14.7)	390.2	375.6	448.0	69.2
40-99	82.2	.31	2.3	1.7	52.2	53.9	215.3	21.6
10-39	519.7	.27	1.9	(.2)	21.8	21.7	138.2	17.9
0-9	267.6	.38	1.2	(1.1)	6.4	5.3	121.3	11.9
(1)-(10)	153.8	.40	2.1	(6.0)	2.5	(3.4	152.6	20.0
(11)-(40)	57.5	.46	6.8	(24.6)	4.5	(20.0	246.4	56.0
(41)-(100)	13.1	.43	18.3	(69.0)	8.0	(61.0	291.7	146.3
Less than (100)	5.0	.58	29.6	(240.7)	7.5	(233.2	462.7	201.1
Total	1,106.8	.12	2.4	(4.3)	19.1	14.8	152.9	21.7

Note: Data in parentheses are negative values.

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